REMARKS

In the present amendment, claims 1 and 2 have been amended to narrow the recited through-hole diameter of the adhesive. Claim 3 has been amended to recite the claimed feature in a structural format.

Claims 1-3 are pending. The Applicants respectfully request reconsideration and allowance of this application in view of the following remarks.

Claims 1, 2, 3/1 and 3/2 have been rejected under 35 USC 103(a) as being unpatentable over Xie et al. (U.S. Patent No. 6,503,620) ("Xie") in view of Eevers et al. (U.S. Pub. No. 2001/055928 A1) ("Eevers"). This rejection is respectfully traversed for the reasons discussed below.

Claims 1 and 2 recite a pressure-sensitive adhesive sheet that includes a base material and a pressure-sensitive adhesive layer formed with a plurality of density-specific holes passing through the surfaces. Claims 1 and 2 include values for maximum temperature (claim 1 only), hole diameter, hole density, storage modulus and loss tangent as follows.

CLAIMS 1 and 2	
Parameter	**Value**
Maximum Temperature of explosure after having been stuck onto an adherend - **Claim 1 Only**	T_{max} (wherein 20°C ≤ T_{max} ≥ 130°C) **Claim 1 Only**
Hole diameter in base material and pressure sensitive adhesive layer	0.1 to 150 μm (as amended)
Hole density of through-holes	30 to 50,000 per 100 cm^2
Storage modulus at T_{max}	not less than 4.5×10^3 Pa
Loss tangent at T_{max}	not more than 0.78

Applicants' amendment to narrow the recited range of the through hole diameter in claims 1 and 2 is supported throughout the specification and particularly on pages 9 last paragraph and continuing to page 10 line 7. Applicants' adhesive sheet is suitable for industrial applications that require mitigation of air entrapment and blistering, especially when exposed to higher temperatures. An example may be a pressure-sensitive adhesive sheet with a large area or where gas is emitted from the adherend.

Xie's invention relates to multilayer composite PSA constructions with improved stress tolerance useful for making labels. Specifically, storage modulus G' for most blends is equal to or greater than 3.7×10^3 Pa at its lowest point.

On page 2 of the Detailed Action, the Examiner admits that the teachings of Xie do not disclose the hole diameter and hole density parameters recited in Applicants' claims 1 and 2.

The Examiner cites Eevers in order to cure the deficient teachings of Xie. Eevers' invention relates to a *water-permeable* [emphasis added] adhesive tape for processing semiconductor wafers and other semiconductor related materials. Eevers discloses through holes whose diameter is 0.17 to 0.80 mm (paragraph [0014]) or 170 to 800 μm. Eevers' diameter values for the through holes are outside the range set forth in Applicants' amended claim 1 recited as 0.2 to 150μm.

The Examiner asserts that there is a reason to combine the teachings of Xie and Eevers since Eevers describes a feature of Applicants' claimed invention, that is, "increasing adherence and preventing delamination." However, Eevers teaches using a water stream to separate semiconductor wafers into chips and IC parts. The water stream presents problems in that the chips and IC parts fixed onto the adhesive tape may fly off during the dicing step or may be destroyed by contamination with molten particles from the dicing (paragraph [0004]). The object of Eevers' water-permeable adhesive tape is that it "ensures good adherence of the wafer of material thereon and prevents delamination of the chips or parts therefrom during the dicing step" (paragraph [0005]).

Applicants respectfully submit that the pressure sensitive adhesive (PSA) label of Xie does not teach a *water-permeable adhesive tape*. Xie never mentions water-permeability or holes with respect to the PSA label construction. These features taught by Eevers are not found and cannot be implied by the teachings of Xie. In fact, Xie teaches *water resistance* in the section of the specification entitled Detailed Description of the Preferred Embodiment of the Invention as follows:

> The polymeric film material is chosen to provide a facestock with one or more of the desired properties such as improved printability, weatherability, strength, water resistance, abrasion resistance, gloss, die-cuttability, and matrix strippability (col. 16, lines 3-7).

The *water-permeable* feature of Eevers would likely compromise the stress tolerance objective of Xie's PSA construction. Therefore, Applicants submit that Eevers' *water-permeable* adhesive tape teaches away from Xie. Further, the through hole diameter and hole density ranges taught by Eevers would likely decrease the stress tolerance objective of Xie's invention. Thus, there would be no reason for one skilled in the art to combine these teachings to arrive at Applicants' presently claimed invention.

More particularly, there is no reason for one skilled in the art to modify Xie to include through holes having the density taught by Eevers for the Xie PSA label construction laminates. When the PSA label has through holes, the adhesive area becomes smaller. In common PSA labels, the smaller the adhesive area, the weaker the adhesive force. Similarly to water-permeability, through holes would compromise the inventive feature of Xie's PSA constructions for improved stress tolerance. The teachings of Xie relate to increasing the stress tolerance (or strength) of PSA labels by the addition of fillers.

Finally, it should be noted that Xie measures stress tolerance by the use of storage modulus and loss tangent parameters, which are well-known as standard measures of stress tolerance to those skilled in the art. As shown in Table X of Xie most values of G' for the adhesive blends of Xie are not less than 4.5×10^3 Pa and do not have a loss tangent of more than 0.78 as recited by Applicants. For example,

Blend 1 has a storage modulus of 3.6×10^4 Pa and a loss tangent of 0.3 at 120°C; and Blend 4 has a storage modulus of 2.4×10^8 Pa and a loss tangent of 0.1 at 25°C.

Applicants use the storage modulus and loss tangent parameters to measure the *air entrapment removability* of the presently claimed pressure-sensitive adhesive sheet. These results can be seen in Table 1 on page 28 of Applicants' specification.

Table 1 shows that for the pressure-sensitive adhesive sheets of Examples 1 to 8 for which the pressure-sensitive adhesive layer had a storage modulus of not less than 4.5×10^3 Pa and a loss tangent of not more than 0.78 at 120°C, the air entrapment was easily eliminated (pages 28 last paragraph to page 29 line 7).

Based on the foregoing remarks, one skilled in the art would have no reason to combine the teachings of Xie and Eevers to result in Applicants' claimed invention. Accordingly, Applicants' claims 1 and 2 are not obvious in view of any combination of the cited references and this rejection should be withdrawn.

Applicants also respectfully request that the Examiner withdraw the rejections of claim 3/1 and 3/2 since claim 3 depends on claim 1 or claim 2, which are asserted above to be patentably distinguishable from the combined teachings of Xie and Eevers. Specifically, neither Xie nor Eevers teach/suggest laser-processed

through holes to enable holes with good air escape ability and with sufficient density to be formed (Page 7, lines 16-20).

In view of the foregoing, the applicants submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions arise, the examiner is invited to contact the undersigned by telephone.

If there are any problems with the payment of fees, please charge any underpayments and credit any overpayments to Deposit Account No. 50-1147.

Respectfully submitted,

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